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Abstract

Until now there exists no consensus view on the determinants of unemployment. Whereas some empirical papers find that mainly labour market institutions explain unemployment, others argue that this correlation is not robust. One explanation for these contradictory results is that labour market institutions affect unemployment in varying labour market regimes differently. Due to institutional complementarities and a trade-off between external and internal flexibility, certain labour market institutions show different impacts on unemployment depending on the general institutional arrangement. Support for this is found when testing for the impact of labour market institutions on unemployment in different labour market regimes with panel data for 20 OECD countries in the period 1982 to 2003. While external labour market flexibility shows the expected impact on unemployment in some countries, this is not the case in corporatist countries, which are characterised by high internal flexibility and good labour relations. Taking account of the regime is therefore crucial for successful labour market policy. Additionally, high real interest rates and restrictive monetary and fiscal policy in downturns are found to increase unemployment, suggesting that policy makers should react actively to economic downturns.

Keywords: Unemployment; Labour market institutions; Institutional complementarities; Corporatism; Internal flexibility; Labour market regimes; Varieties of capitalism; Monetary policy; Fiscal policy

JEL: E24, E61, J50, J58, P16

1. Introduction

What determines unemployment in the long run? Although the answer to this question is of high relevance for economic theory and the well-being of societies, until now there exists no consensus explanation. Several econometric studies investigate this topic, but the results are ambiguous. According to the 'standard explanation', structural unemployment is driven by labour market flexibility. This view is confirmed by many authors who argue that unemployment is primarily the result of rigid labour market institutions (e.g. OECD, 1994; Nickell, 1997; IMF, 2003; Nickell et al., 2005; Bassanini and Duval, 2006).

But several researchers object that the empirical support for this view is not conclusive. For example, Blanchard and Katz argue that "the crosscountry evidence on the relation of unemployment to rigidities is less than fully supportive." (1997: 67) Fitoussi et al. find that "the institutional reforms in the OECD proposal can only be a small part of the story." (2000: 257) Baker et al. consider the impact of labour market institutions on unemployment nebulous: "While it is possible to construct multivariate regressions that find significant relationships between various labour market institutions and the unemployment rate, it is also easy to construct equally plausible regressions that do not." (2004: 15) Baccaro and Rei show that "the impact of labor market institutions is, for the most part, not robust and that unemployment is mostly increased by high real interest rates and independent central banks." (2007: 563) Freeman summarises that "despite considerable effort, researchers have not pinned down the effects, if any, of institutions on […] unemployment and employment." (2007: 19) And Bell and Blanchflower conclude:

> "The orthodox explanation of unemployment that argues that institutions matter has been subject to fairly extensive econometric testing, and in recent years, the validity of the empirical results supporting this view has been called into question. It has proved difficult to estimate a set of cross-country panel unemployment regressions that contain a lagged unemployment rate and a full set of year and country dummies and show that any of the labour market rigidity variables work." (2009: 15f)

They also doubt that labour market institutions interacting with macroeconomic shocks explain unemployment satisfactorily, as is argued by Blanchard and Wolfers (2000).

The impact of labour market institutions on unemployment is an ongoing debate. In this paper it is shown that one reason why it is hard to detect a robust impact of labour market

institutions on unemployment is that there exist several labour market regimes in OECD countries. External labour market flexibility does not play the same role in determining unemployment in every regime.

The paper is structured as follows: Section 2 reviews the literature on institutional complementarities and discusses explanations for different labour market regimes. Section 3 presents the estimation procedure, data sources and variables used. Section 4 summarises the empirical results. Finally, section 5 concludes.

2. Institutional complementarities and labour market regimes

As is illustrated in section 1, it is often stated that the standard linear estimates of reduced-form unemployment equations, where institutions or macroeconomic shocks together with institutions explain the development in unemployment across time and countries, are not robust or may even be misspecified. In recent years, one major string of research therefore started to focus on institutional complementarities. Two institutions are complementary if the presence of one increases or decreases the returns from the other (Hall and Soskice, 2001: 17). This helps to explain why countries with diverse institutional settings and different degrees of labour market flexibility have equally low unemployment rates.

Several studies tested for institutional complementarities, but the interactions allowed for are often the result of an ad-hoc selection without theoretical guidance. Some of these studies focused on the wage-bargaining system, as it seems to have important empirical effects on labour markets. For example, Elmeskov et al. (1998) test for complementarities between some labour market institutions and/or bargaining centralisation/coordination in OECD countries. They find evidence that unemployment benefits have different effects on unemployment depending on the intensity of public spending on active labour market policies. Also, different collective bargaining arrangements influence the way in which employment protection legislation and the tax wedge affect unemployment. Belot and van Ours (2004) find that replacement rates and tax rates reinforce each other, and that in countries where bargaining mainly takes place at the firm level, employment protection legislation has a strong negative effect on unemployment, while union density has a positive one. Bassanini and Duval (2006, 2009) explain unemployment in OECD countries econometrically with a new data set, compiled by OECD. They perform standard estimates of reduced-form unemployment

equations, but also identify institutional complementarities. They find that the negative impact of the tax wedge on unemployment is lower in countries with decentralised wage bargaining, and that employment protection legislation has hardly any impact on unemployment in countries with centralised wage bargaining, but do not pay much attention to these results.

While much of the empirical literature focuses on interactions between labour market institutions, OECD (2006: 183-205) follows a different approach. 24 OECD countries are grouped into four country-clusters according to their institutional labour-market settings at the early 2000's. Principal components analysis is used to identify these clusters. When analysing the labour market performance of these clusters, the findings are that the 'North European countries' are as successful in achieving low unemployment than the 'English-speaking countries', although these two clusters show highly different settings in institutions in almost every selected area. For example, the generosity of the unemployment benefit system and union coverage are highest in the North European countries, and lowest in the English-speaking countries. The North European countries also have a high tax wedge, a high union density, strict employment protection legislation and spend most on active labour market policy. According to OECD, "[t]his suggests that there is not a single road for achieving good employment performance." (2006: 192)

This approach of OECD (2006) is enriching the debate, as it indicates that labour market institutions are part of a broader institutional model and that different labour market regimes exist. As is argued in the literature on 'varieties of capitalism', institutions are parts of complex societal and economic arrangements and strategic interactions, and fulfil different functions in these diverse economic regimes (e.g. Hall and Soskice, 2001; Amable, 2003; Freeman, 1998, 2000). And indeed, there exists varied evidence suggesting that important variables are omitted in the 'standard approach', when explaining unemployment only with standard labour market institutions, *and* that these labour market institutions do not play the same role in all countries.

First, the 'standard-approach' focuses only on indicators for external labour market flexibility. But, especially in corporatist countries, internal flexibility is as important to adjust production capacities and costs to actual demand. While with external flexibility this adjustment is achieved via hirings or dismissals, with internal flexibility the same outcome is obtained through variations in regular working hours and overtime work, working time accounts, and

(publicly funded) short-time working schemes.[1] Eichhorst et al. (2010) construct a quantitative indicator for 16 European countries in 2003, which includes measures of internal flexibility. They also consider information on functional flexibility, which requires a skilled and flexible labour force, adapting to structural change (external functional flexibility), or a flexible organisation of the production process (internal functional flexibility). When internal flexibility is included in their summary flexibility indicator, especially countries typically described as corporatist – like Austria, Denmark, Finland, Germany, the Netherlands, and Sweden (see also Appendix 1) – show a much greater overall flexibility than before. Denmark, Finland, and Germany are even more flexible than the UK. This suggests that important indicators for flexibility are omitted when focusing only on standard labour market institutions.

What's more, the results of Eichhorst et al. (2010) confirm that there exist different labour market regimes. The Anglo Saxon countries or liberal market economies are on average characterised by high external flexibility, but low internal flexibility. The Nordic and central European countries or corporatist economies show a high degree of internal flexibility and a low degree of external flexibility. And some southern European countries are below average in external and internal flexibility measures. This helps to explain why some countries with very 'rigid' labour markets – when focusing on indicators of external flexibility – are as good in achieving low unemployment as countries with 'flexible' labour markets.

Second, the 'standard-approach' assumes that wage-moderation, higher work effort and a smoother adjustment of labour supply and demand is achieved through pressure on unions and unemployed through the deregulation of labour markets. While this may be a reasonable approximation for the functioning of labour markets in liberal market economies, it is a very crude description for the process of wage bargaining and labour market policy in corporatist countries. In these countries, employer associations, unions and (perhaps even) the government negotiate together about wages, working time and (perhaps even) labour market and social policy (see Aidt and Tzannatos (2002) for a survey of the literature). Social partners consider the situation of the whole economy in decision-making, and may respond to rising unemployment due to macroeconomic shocks with social pacts and other arrangements

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[1] The German experience in the 'Great Recession', where GDP dropped by 4.7% in 2009 but employment remained constant, while working hours were reduced drastically, illustrates the importance of internal flexibility (Möller, 2010; Herzog-Stein et al. 2011).

to fight unemployment (e.g. Visser, 1998; Baccaro, 2003). Therefore, external labour market flexibility plays a less relevant role in achieving low unemployment in corporatist countries.

In the literature on (neo-)corporatism and social partnership, it is further argued that trade unions are compensated by the government for wage moderation and social peace (Headey, 1970; Schmitter, 1977; Lange and Garrett, 1985; Alvarez et al., 1991). Although this tendency has probably decreased since the 1970s (Hassel, 2003), it still plays a certain role (Hicks and Kenworthy, 1998; Hemerijck et al., 2000; Baccaro, 2003; Brandl and Traxler, 2005). This means that there is some trade-off between internal and external flexibility in corporatist countries.

Third, Estevez-Abe et al. (2001) argue that if employment and income protection is high, as is particularly the case in corporatist countries, workers are more willing to invest in firm- and industry-specific skills. In turn this makes it more attractive for firms to invest in skill-intense production techniques, making the labour market for general skills shrink. Because of the resulting international institutional comparative advantage of these firms in a particular skill-intense production niche, employment and income protection is favourable for employees *and* employers. This in turn is reflected by good labour relations. Related arguments are put forward by Blanchard and Phillipon (2004) and Feldmann (2006). They find that good labour relations (which are highly correlated with corporatism; see Appendix 1) decrease unemployment. Good labour relations increase the probability of concessions of workers to overcome adverse economic shocks. They further decrease labour turnover, making employers more willing to invest in human capital, and employees become more motivated to acquire firm-specific skills and to make proposals for an improvement of production techniques and work organisation. This results in higher productivity and lower unemployment. According to these arguments, employment and income protecting institutions, good labour relations, skill investments of workers and low unemployment are interrelated in a systematic way in corporatist countries.

To sum up, internal flexibility plays an important role in adapting labour demand to labour supply especially in corporatist countries. In wage bargaining processes in corporatist countries (with good relations between the social partners and the state) worker's representatives accept increasing internal wage and working time flexibility, but receive some compensation in the form of job and income security. There exists a (certain) trade-off

between internal and external flexibility as a result of the political economy of wage bargaining in corporatist countries. These mechanisms are amplified by the impact of good labour relations and employment and income protection on skill-investments and productivity of workers. Therefore, external labour market flexibility shows a different impact on unemployment in corporatist labour market regimes.

In what follows, this theory will be tested. It will be investigated for a set of OECD countries with cross-country/time-series data if evidence for a different impact of labour market institutions on unemployment in corporatist countries can be found.

3. Estimation procedure and data

Internal flexibility plays an important role in determining overall labour market flexibility, while external flexibility has not the same impact on labour market outcomes in all countries. As there exists only cross-country/time-series data on indicators for external flexibility, but not internal flexibility, it is not possible to test directly for the impact of the latter on unemployment. But internal flexibility is related to corporatism. Countries with high internal flexibility are also countries with a tradition of social partnership and a high degree of coordination and/or centralisation of wage bargaining (Eichhorst et al., 2010; Appendix 1). When testing for the determinants of unemployment we therefore use fixed effects to control for country-specific averages of internal flexibility and other omitted variables, and allow the coefficients of the institutional variables to vary with corporatism. The estimated reduced-form unemployment equation has the following form:

$$U_{it} = \sum_j \beta_j X_{it}^j + \gamma_j (X_{it}^j - \overline{X}^j)(Corporatism) + \chi G_{it} + \omega_k M_{it}^k + \alpha_i + \lambda_t + \varepsilon_{it} \qquad (1)$$

U_{it} is the standardised unemployment rate. X_{it}^j is a vector of labour market institutions, namely the tax wedge, unemployment benefits, employment protection legislation, union density, product market regulation, and a dummy variable for a corporatist labour market regime. All institutional variables except the corporatism dummy are expected to have a positive sign. $\overline{X}^j$ are the sample means of X_{it}^j across countries and time.[2] The corporatism-dummy is interacted with the other (demeaned) institutional variables, to allow for different

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[2] Demeaning allows to interpret the coefficient as coefficient of the hypothetical average country (Baccaro and Rei, 2007: 536).

coefficients of the labour market institutions indicators in the corporatist labour market regime. G_{it} is the output gap, which controls for cyclical fluctuations of the unemployment rate. M_{it}^{k} is a vector of macroeconomic and macroeconomic policy variables, included in some specifications as robustness test. α_i and λ_t are country- and time-fixed effects. Country-specific effects are included to control for country-specific averages of omitted variables, time-specific effects to control for common unobserved shocks.

Following Bassanini and Duval (2006, 2009) a static specification is preferred, as it is difficult to specify the correct error structure of a model with institutional variables that are changing infrequently but strongly, and whose effect might take several years to materialise.[3] The sample covers 20 OECD countries over the period 1982-2003. The data on labour market institutions with the exception of the corporatism-dummy is from OECD.[4]

As the corporatism variable plays a central role in this analysis, a dummy variable for corporatist labour market regimes is constructed with data from the ICTWSS Database.[5] The definition of corporatism is not straight forward. One traditional view focuses on the way public policy is formed:

> "Corporatism […] is an institutionalised pattern of policy formation in which large interest organisations cooperate with each other and with public authorities not only in the articulation (or even 'intermediation') of interests, but – in its developed forms – in the 'authoritative allocation of values' and in the implementation of such policies." (Lehmbruch, 1981: 150)

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[3] Also, "within a static framework, serial correlation in the residual can be seen essentially as a problem of efficiency and not of consistency of the estimates." (Bassanini and Duval, 2009: 42) Nevertheless, a dynamic specification is also performed as robustness check (see specification 6 in Appendix 2). As country-specific effects are probably not independent from other variables in the estimated equation, as is explicitly argued in the theoretical considerations in section 2, fixed effects are appropriate.

[4] A detailed description of the data can be found in Bassanini and Duval (2006, Annex 2: 102-111). The countries in the sample are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States. Bassanini and Duval (2006, 2009) remove the observations for Finland, Germany and Sweden in 1990 and 1991, and use different fixed effects for these countries over the periods 1982-1989 and 1992-2003 because of the collapse of the Soviet Union, the unification and the banking crisis respectively (Bassanini and Duval, 2006: 9). We follow this approach. As robustness check specification 7 (in Appendix 2) does not omit certain years and only allows for different fixed effects for Germany after unification.

[5] ICTWSS stands for 'Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts'; the data is described in Visser (2009). The Bassanini and Duval data set also includes a dummy variable for centralisation and coordination of the wage bargaining process as an indicator for 'high corporatism'. But their variable focuses only on the wage-bargaining system, was constructed from data with five-year frequency, and its classification is sometimes surprising. For example, Sweden is classified as non-corporatist in all years, although it is characterised by high wage bargaining centralisation and co-ordination until the mid 1990s, and by a high degree of involvement of the social partners in the social and economic policy-making process in all years, according to data from the ICTWSS Database. However, in specification 8 (in Appendix 2) this 'high corporatism'-variable from Bassanini and Duval (2006, 2009) was used as alternative measure for our corporatism-dummy to check the robustness of our results.

Others see a centralised wage bargaining system as the main characteristic (Schmitter, 1981; Calmfors and Driffill, 1988). And in recent years the focus has shifted more towards the coordination of wage bargaining (Soskice, 1990).

To capture these different characteristics of corporatism, annual information on wage bargaining coordination (1 to 5 scale), wage bargaining centralisation (1 to 5 scale) and routine involvement of unions and employers' organisations in the preparation, decision and implementation of government's social and economic policy-making (0 to 2 scale) from the ICTWSS database is applied to construct the corporatism-dummy. This variable has the value of 1 for observations classified as corporatist, and 0 elsewise. To be defined as corporatist in a specific year, a country needs to be classified as "economy-wide bargaining" (5) or "mixed industry and economy-wide bargaining" (4) with respect to wage bargaining coordination; and/or "national or central level" (5) or "national or central level, with additional sectoral/local or company bargaining" (4) with respect to wage bargaining centralisation; and/or "unions and/or employers are routinely involved (through social councils, special committees or pre-parliamentary procedures) in the preparation of and decision-making over public policies in the social-economic domain" (2) with respect to routine involvement of social partners in policy-making.[6]

This corporatism-dummy is interacted with the other labour market institution variables. Employment and income protection institutions are not expected to have the same impact on unemployment in corporatist labour market regimes. To be more precise, the interaction term of unemployment benefits and employment protection legislation with corporatism is expected to be negative. The same is true for product market regulation. Stringent product market regulation creates market entry barriers and less competition, which allows firms to reduce lay-offs in a downturn and to keep qualified workers with company-specific skills. On the other side, product market regulation is supposed to slow down resource allocation and increase unemployment in the long run. Following Estevez-Abe et al. (2001), the former is expected to play a more important role in keeping unemployment low in corporatist labour market regimes. This is why the effect of product market regulation on unemployment is

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[6] The following countries are classified as corporatist in these periods: Australia (1983-1995), Austria (1982-2003), Belgium (1982-2003), Denmark (1982-2003), Finland (1982-2003), Germany (1982-2003), Ireland (1987-2003), Italy (1992-2003), Japan (1982-2003), Netherlands (1982-2003), Norway (1982-2003), Spain (1982-1986), Sweden (1982-2003) and Switzerland (1982-2003).

expected to be smaller in corporatist regimes. With respect to the tax wedge and union density we do not expect the interaction term to show a specific impact.

As a robustness check and to detect further determinants of unemployment, we test in some specifications for the impact of macroeconomic variables; namely real long-term interest rates, and indicators for monetary and fiscal policy reactions in downturns. Real long-term interest rates are found to increase unemployment in several studies (e.g. Fitoussi et al., 2000; IMF, 2003; Baccaro and Rei, 2007; Gianella et al., 2008). High real interest rates are expected to increase the cost of capital, and therefore slow capital accumulation and increase unemployment. The long-term real interest rates are defined as the difference between the 10-year nominal government bond yield in percent and the annual change in the GDP deflator in percent; they are constructed with data from OECD.

Also, restrictive monetary policy in downturns is often suspected of increasing structural unemployment via unemployment hysteresis or a slow down of capital accumulation. Ball (1997, 1999), Schettkat and Sun (2009), and Stockhammer and Sturn (2011) showed that monetary policy reactions in recessions significantly influence the degree to which an increase in actual unemployment becomes structural. To test this, an index for central bank independence, also used in IMF (2003), Baker et al. (2004) and Baccaro and Rei (2007), is applied. This index captures the degree to which the central bank is able to resist political pressure on monetary policy; a high independence indicates a restrictive stance of the central bank. This (demeaned) index is interacted with a proxy for severe economic downturns. We define a severe downturn as the 20 per cent of observations with the highest negative output gap. This variable is constructed as a dummy variable, which shows a value of 1 if an observation is among these 20 percent and 0 otherwise. There is not much literature on the impact of fiscal policy on unemployment, but the same mechanisms which lead to long-term impacts of monetary policy can also result in an impact of fiscal policy. Therefore, also a (demeaned) variable for the fiscal policy reaction – the annual change in the cyclically adjusted government primary balance as a percentage of potential GDP, as it is published by OECD – is interacted with the downturn-dummy.

4. Empirical results

The estimation results are presented in Table 1. Specification 1 allows for interactions between all institutional variables with corporatism. Specification 2 omits not-significant interaction terms and serves as baseline specification. Both specifications show nearly identical results. A statistically significant impact of all variables included in specification 2 is found.[7]

According to our baseline specification and in line with most of the empirical literature, a high average unemployment benefit replacement rate increases non-cyclical unemployment. A 10 percentage point decrease in unemployment benefits would decrease unemployment by 1.3 percentage points according to our results.[8] In theoretical models and empirical papers it is often argued that high unemployment benefits decrease the search effort of unemployed and increase their reservation wage, and therefore increase unemployment. With respect to our thesis of a trade-off between internal and external flexibility and a compensation of cooperative behaviour of workers and unions, a significant negative interaction term between unemployment benefits and corporatism seems plausible, but is not found in the data.[9]

[Insert Table 1 about here]

A high tax wedge possibly increases labour costs and affects unemployment positively. According to our estimates a 10 percentage points reduction of the tax wedge results in a 2.1 percentage points decrease in unemployment. The impact is significantly higher if corporatism is high. Taking these results at face value, above average reform-benefits are achieved in corporatist labour market regimes when reducing the tax wedge.

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[7] The results are robust in various ways. Specification 5 (in Appendix 2) addresses possible serial correlation in the residuals. Specification 6 (in Appendix 2) addresses the possible endogeneity of explaining variables. Specification 7 (in Appendix 2) does not omit the years 1991-92 for Finland, Sweden and Germany, and allows for different fixed effects only for Germany after 1992 (see footnote 4). Specification 8 (in Appendix 2) uses an alternative measure for corporatism (see footnote 5).

[8] However, one should be cautious when interpreting these effects, because unemployment benefits are also important automatic stabilisers which help to close the output gap in economic downturns. In the presence of hysteresis, this prevents a temporary increase in unemployment from becoming structural. Therefore, possible positive effects of unemployment benefits on unemployment are hidden when controlling for output gap fluctuations, as is done in the presented specifications. Further, the impact of unemployment benefits on unemployment could be overestimated because of the use of gross replacement rates instead of the more appropriate net replacement rates – which are only available for a much smaller sample (Howell/Rehm 2009).

[9] In specification 7 (in Appendix 2) the interaction-term between unemployment benefits and corporatism is significant. According to this result, the detected impact of unemployment benefits on unemployment is nearly halved in corporatist countries.

The union density shows a slight negative impact on unemployment. Although routinely included in unemployment regressions, it is often mentioned that union density is not a good proxy for the wage-bargaining power of workers (e.g. Bean, 1994; Bassanini and Duval, 2006).[10] But a significant negative impact on unemployment is surprising. An explanation could be that unions decrease costly fluctuations and increase productivity of employees through improved communication between employers and employees, with a positive impact on unemployment (Freeman, 1980; Freeman and Medoff, 1984). Union density probably captures a positive effect of corporatism, which is not controlled for here.

Theoretically it is not clear if strict employment protection legislation increases unemployment in the long run. Some empirical studies find an increasing impact on unemployment, while most studies do not detect a robust influence (OECD, 2006: 98). According to our results, employment protection legislation increases unemployment significantly – an increase by one standard deviation of the sample increases unemployment by 1.2 percentage points –, but has a negative effect of 0.2 percentage points if corporatism is high.[11] This result fits very well into the thesis of different labour market regimes. In corporatist countries with strict employment protection legislation, firms and unions find ways to adjust labour demand to supply other than by hiring and sacking, namely through internal flexibility. The positive effect of a reduction of employment protection legislation on unemployment is overcompensated by the negative effects it has on internal flexibility. Also OECD (2010: 63) points out that there is evidence for a cross-country trade-off between low employment protection regulation and high internal flexibility.

Strict product market regulation is found to increase unemployment significantly. But as expected, it shows a much lower effect in corporatist labour market regimes. A reduction by one standard deviation of the sample reduces unemployment by 0.8 percentage points, but only about 0.3 percentage points in corporatist regimes.[12] Stringent regulated product markets allow firms to keep qualified workers in a downturn, but slow down resource allocation in the

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[10] The collective bargaining coverage rate would be a better measure, but there are no appropriate time-series available.

[11] The employment protection legislation index ranges from 0 (less restrictive) to 6 (more restrictive). Its average value and standard deviation in the sample are 2.1 and 1.1, respectively. The joint coefficient of 'Employment protection legislation' and 'Employment protection legislation*Corporatism' in specification 2 is maybe equal to zero according to the Wald test. According to specifications 7 and 8, no significant increasing effect is found, while the decreasing effect of the interaction term is significant in every specification.

[12] The product market regulation legislation index ranges from 0 (less restrictive) to 6 (more restrictive). Its average value and standard deviation in the sample are 3.8 and 1.3, respectively. The joint coefficient of 'Product market regulation' and 'Product market regulation*Corporatism' in specification 2 is maybe equal to zero according to the Wald test.

long run. In corporatist labour market regimes, keeping qualified workers seems to play a more important role for the long-term performance of firms than in other regimes. Finally, a direct decreasing impact of 1.0 percentage point of corporatism on unemployment is found.

Specifications 3 and 4 additionally test for the impact of real interest rates, and monetary and fiscal policy. According to specification 3, high long-term real interest rates increase non-cyclical unemployment substantially. An increase in the long-term real interest rates by 2 percentage points increases unemployment by 0.3 percentage points. Some economists argue that central banks influence short- and long-term interest rates (e.g. Blanchard, 2005), but this remains disputed. Therefore it is not clear if our result indicates an impact of monetary policy on unemployment. To test the impact of macroeconomic policy more explicitly, we include interaction terms between the dummy for severe downturns and the proxies for both monetary policy reaction and fiscal policy reaction in specification 4. According to these results, a restrictive stance of the central bank on monetary policy and pro-cyclical fiscal policy increases unemployment significantly in severe downturns. Decreasing the central bank independence by one standard deviation results in a 0.5 percentage point reduction in unemployment.[13] A 1 percentage point decrease of the cyclically adjusted government primary balance (as a percentage of potential GDP) in a severe downturn results in 0.2 percentage points lower unemployment.[14]

5. Conclusion

We argue that labour markets work differently in corporatist labour market regimes than in non-corporatist for mainly two reasons. First, internal flexibility is much higher in corporatist countries than in non-corporatist. Therefore, overall flexibility of labour markets is especially underestimated in corporatist countries when focusing only on standard labour market institutions. Second, there is evidence for a trade-off between high internal and external flexibility, due to the political economy of wage bargaining processes. In corporatist labour market regimes, unions receive compensation in the form of income and job security for high

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[13] The central bank independence index ranges from 0 (less independent) to 1 (more independent). Its average value and standard deviation in the sample are 0.6 and 0.2, respectively.

[14] The results presented are reasonably robust to different definitions of severe downturns. When experimenting with various definitions – a downturn was defined as the 15, 20 and 30 percent of observations with the highest negative output gap –, the fiscal policy indicator always had a significant impact, while the monetary policy indicator became insignificant in one variation. This may be a result of the relative crudeness of the monetary policy proxy for actual central bank behaviour.

internal flexibility, wage moderation and social peace. Therefore, labour market institutions play a different role in corporatist regimes than in non-corporatist.

We found support for this thesis in our empirical investigation. Although it may hardly be possible to disentangle the exact impact of certain indicators for external labour market flexibility in such a regime of corporatist functioning of labour markets in the absence of good data on internal flexibility, our results suggest that the tax wedge and unemployment benefits increase unemployment also in corporatist countries. Product market regulation shows only a very modest impact in corporatist countries. And strict employment protection legislation even goes along with lower unemployment in corporatist countries, while it has an increasing effect on the average country. This indicates a strong trade-off between employment protection regulation and internal flexibility.

These results cast doubts on the view proposed by OECD (1994), IMF (2003) and others, that labour market deregulation is a universal panacea against high unemployment. There is evidence for different labour market regimes, which are able to achieve low unemployment through different channels. Also, OECD (2006) points out that at least two labour market regimes were able to achieve low unemployment in the last decades: the liberal and the corporatist one. Following the deregulation paradigm in corporatist economies may reduce the quality of labour relations and the willingness of employees to cooperate in aspects of internal flexibility, as well as the necessity for social partners to deal with these issues. Therefore external flexibility increases, but this may be outweighed by a reduction in internal flexibility, with unclear net-effects on unemployment. Partial deregulation in a corporatist country can shift it into the intermediate position with relatively low external and internal flexibility. Taking account of the regime is therefore necessary for successful labour market policy.

As several studies argue that long-term real interest rates and monetary and fiscal policy in downturns influence unemployment, this topic was also investigated. We found that these macroeconomic variables have a substantial impact. According to our results, policy makers should respond actively to economic downturns with expansive monetary and fiscal policy, to avoid a negative long-term impact on unemployment.

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Table 1: Determinants of unemployment (annual data, 1982-2003, 20 OECD countries)

	1 Interactions for all institutions (fixed effects, estimated by OLS)	2 = 1 without insignificant interactions	3 = 2 with long-term real interest rate	4 = 3 with monetary and fiscal policy reaction in severe downturns
Unemployment benefits replacement rate	0.13*** (5.99)	0.13*** (8.00)	0.11*** (5.59)	0.10*** (5.08)
Unemployment benefits replacement rate*Corporatism	-0.01 (0.57)			
Tax wedge	0.20*** (7.95)	0.21*** (7.85)	0.21*** (7.36)	0.20*** (7.08)
Tax wedge*Corporatism	0.14*** (3.61)	0.12*** (4.60)	0.11*** (4.19)	0.11*** (4.18)
Union density	-0.07*** (4.20)	-0.07*** (4.32)	-0.07*** (3.95)	-0.06*** (3.01)
Union density*Corporatism	-0.01 (0.75)			
Employment protection legislation	1.26** (2.34)	1.11** (2.45)	0.82* (1.74)	0.87** (2.04)
Employment protection legislation*Corporatism	-1.47*** (2.67)	-1.26*** (2.63)	-1.06** (2.29)	-0.99** (2.03)
Product market regulation	0.63*** (2.91)	0.63*** (3.09)	0.60*** (3.21)	0.54** (2.51)
Product market regulation*Corporatism	-0.43** (2.28)	-0.43** (2.23)	-0.40** (2.03)	-0.44** (2.19)
Corporatism	-1.06*** (4.41)	-0.99*** (5.02)	-0.99*** (5.04)	-0.85*** (4.14)
Long-term real interest rate			0.13*** (2.83)	0.11** (2.46)
Monetary policy reaction in severe downturns				1.99** (2.44)
Fiscal policy reaction in severe downturns				0.20** (2.38)
Output gap	-0.51*** (15.79)	-0.50*** (17.28)	-0.49*** (15.06)	-0.51*** (15.37)
Observations	434	434	434	420
Adjusted R-squared	0.91	0.91	0.92	0.92

Notes: Value of heteroskedasticity robust t statistics in brackets. *, **, *** statistically significant at the 10, 5, and 1 per cent levels, respectively.
Source: OECD, ICTWSS Database, Baker et al. (2004)

Appendix

Appendix 1: Corporatism, internal flexibility, and the quality of labour relations (+ = high/above average, - = low/below average, 0 = varying, n.a. = no data)

Country	Corporatism[1]	Internal flexibility[2]	Quality of labour relations[3]
Australia	0	n.a.	-
Austria	+	+	+
Belgium	+	-	-
Canada	-	n.a.	-
Denmark	+	+	+
Finland	+	+	+
France	-	+	-
Germany	+	+	+
Ireland	0	-	n.a.
Italy	0	-	-
Japan	+	n.a.	+
Netherlands	+	+	+
New Zealand	-	n.a.	-
Norway	+	n.a.	+
Portugal	-	-	-
Spain	0	-	-
Sweden	+	+	+
Switzerland	+	n.a.	+
UK	-	-	-
USA	-	n.a.	-

Source: [1] in 1982-2003 according to our definition described on p. 7f; [2] in 2003 according to Eichhorst et al. (2009); [3] averages over 1985-2002 according to the World Economic Forum's EOS-Survey, cited in Feldmann (2006)

Appendix 2: Determinants of unemployment (annual data, 1982-2003, 20 OECD countries) - Sensitivity analysis

	5 = 2 using 5-year averaged data with serial correlation robust standard errors	6 = 5 estimated by robust one-step difference GMMs with endogenous variables (all but Corporatism) lagged two periods as instruments	7 = 1 without omitting 1991-92 for Finland, Sweden and Germany, and allowing for different fixed effects after 1992 only for Germany	8 = 2 with alternative measure for corporatism, using the dummy variable for centralised/coordinated wage bargaining from Bassanini and Duval (2006)
Unemployment benefits replacement rate	0.19*** (6.63)	0.35*** (5.13)	0.12*** (5.13)	0.12*** (6.25)
Unemployment benefits replacement rate*Corporatism			-0.05* (1.89)	
Tax wedge	0.33*** (4.18)	0.44** (2.60)	0.21*** (6.89)	0.20*** (7.76)
Tax wedge*Corporatism	0.12** (2.04)	0.12 (0.74)	0.17*** (4.32)	0.14*** (3.21)
Union density	-0.10*** (3.23)	-0.12 (0.17)	-0.05** (2.43)	-0.03** (2.31)
Union density*Corporatism			-0.02 (0.76)	
Employment protection legislation	2.02** (2.65)	4.17** (2.75)	0.67 (1.30)	0.67 (1.32)
Employment protection legislation*Corporatism	-1.67*** (4.61)	-4.20* (1.78)	-1.75*** (3.47)	-0.75* (1.69)
Product market regulation	0.50 (1.22)	1.04** (2.44)	0.66** (2.45)	0.87*** (4.07)
Product market regulation*Corporatism	-0.81*** (3.62)	-0.03 (0.02)	-0.58** (2.39)	-0.54*** (2.65)
Corporatism	-0.87** (2.11)	-3.01* (1.91)	-1.03*** (2.44)	-1.11*** (3.36)
Output gap	-0.59*** (8.76)		-0.59*** (19.03)	-0.46*** (14.97)
Observations	80	80	440	434
Adjusted R-squared	0.94		0.88	0.91

Notes: Value of t statistics in brackets. *, **, *** statistically significant at the 10, 5, and 1 per cent levels, respectively.
Source: OECD, ICTWSS Database

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